

Application of John Dewey's "Complete Act of Thought" To Teaching in Nigerian Philosophy of Education

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John Dewey, an American twentieth century educational philosopher has generated a lot of controversy especially in his educational views as expressed in Democracy and Education. Through this article, it is hoped that his specific views on education principles of method are introduced in Nigeria. One strongly believes that Dewey's scientific method of inquiry as spelt out in his "Complete Act Of Thought" can be vigorously and fruitfully applied to Nigeria's developing philosophy of education, as the method is scientific, meaningful, and purposeful. This paper examines "Dewey's Complete Act of Thought" and discusses how it can be applied to teaching in the Nigerian philosophy of education. In order to achieve this, the paper appropriated three types of explanation to serve as examples of how the five steps of the method can be applied.

Introduction

The purpose of this essay is to examine Dewey's "Complete Act of Thought" and discuss how it is applicable to teaching in the Nigerian philosophy of education. The paper considered three types of explanation and how they can be applied to teaching in . John Dewey,¹ (1859-1952) was trained in formal philosophy and devoted his efforts to elaborating a philosophy of education. Dewey was a prolific author and his Democracy and Education (1916), contained his major statements on educational theory. His other works include: The School and the Society (1898), which recounted his educational practices at the Laboratory School of the University of Chicago. His How we think (1910), stressed problem-solving as complete inquiry. In 1934, he wrote Art as Experience, which treated the aesthetic dimension of human experience.²

As a postgraduate student, Dewey has to study with Hegelian Idealists³ as they dominated philosophy departments of American Universities at the end of the nineteenth century. John Dewey however was also interested in the evolutionary theory of Darwin. Thus, Darwinism was more significant to Dewey than Hegelianism. Darwin's evolutionary theory has postulated that there exists an environment in which organism must adapt in order to survive. "Environment" and "Organism" were crucial in the development of experimental philosophy of education of John Dewey. The organism, a living creature possesses a set of impulses to assist in the maintenance of its life, lives in an environment that both threatens and nourishes its evolutionary (on-going) existence. Dewey believed that the scientific method or the "Complete Act of Thought" if properly and broadly conceived and applied is man's most accurate and efficient means of directing the process of change. According to Dewey, the organism encounters problematic situations that threaten its ongoing existence. This statement can be rephrased in form of an example to accentuate its pedagogic implication: pupils are constantly challenged with one

problem or another in the course of their classroom endeavors. These challenges or “problems” actually threaten the survival of the pupils. They determine their success and failure.⁴ The would-be successful ones therefore must solve these problems since they act as deterrents or stumbling blocks to other activities, e.g. job opportunities, promotions, et cetera. And for John Dewey, the solution to these problems demands an interaction with the environment, which constitutes experience and each successful problem – solving episode builds a transactional network between the individual and his environment.⁵

The Five Steps Of The “Complete Act Of Thought” Of John Dewey

John Dewey’s “Complete Act of Thought” is firmly rooted in his belief that man lives in a social as well as a physical environment and these form life promoting groups. Such a human association enriches experience by providing opportunities for increased human interaction through which individual experiences grow more complex and hence provide greater opportunities for growth. Human intelligence is the sum of this shared experience⁶.

“Complete Act of Thought” or reflective thought of the scientific method is a behaviour pupils should exhibit when they meet situations they cannot deal with on the basis of habit. For Dewey, habit gives continuity to experience and the power to adjust to the environment and control it. But the environment is never completely stable since indeterminate and disunified situations constantly develop. The existential nature of these problems make them perplexing and problematic to the students or persons involved because as pointed out above, habit no longer suffices to guide behaviour. In short, the person caught up in these circumstances does not know what to do. John Dewey illustrated the problematic situation in How We Think thus:

A man traveling in an unfamiliar region comes to a branching of the road. Having no sure knowledge to fall back upon, he is brought to a standstill of hesitation and suspense. Which road is right? And how shall his perplexity be resolved? There are but two alternatives: he must either blindly and arbitrarily take his course, trusting to luck for the outcome, or he must discover grounds for the conclusion that a given road is right⁷

In the illustration presented by Dewey above, there is an option. One can act blindly by trusting providence that the decision one makes turns out favourably, one can act on the basis of intelligence, that is, regulating ones behaviour by reflection. In this case, reflective thought offers the unique service of providing some plan of action that promises best to resolve the problematic and doubtful character of the situation, that is, in Dewey’s example, to choose the right branch of the road.

However, apart from acting intelligently, that is regulating ones behaviour to choose the right road by reflecting, suppose the person does not have the resources adequate for dealing with the situation intelligently? According to Dewey, he will have to be forced to some more primitive level of behaviour. It seems confusion remains pure confusion. In Dewey’s words: “even when a child (or a grown-up) has a problem, it is wholly futile to urge him to think when he has no prior experiences that involve some of the same conditions”.⁸

According to John Dewey, every “Complete Act Of Thought” involves the following five steps:

1. An indeterminate (a branching of the road) situation ensues. There is perplexity, confusion and doubt by one's involvement in a situation whose full character is undetermined. This situation disrupts the smooth flow of one's experience because prior experience of habit is totally inadequate to deal with it. The situation calls for a complete act of thought, or stimulate reflective behaviour. It should be pointed out that when there is no determinate or disturbing state of affairs, there is no thought or reflective behaviour since habit is sufficient to deal with the situation (which actually is no situation since there is nothing disturbing).
2. Dewey calls the second step "a conjectural anticipation, a tentative interpretation of the given elements. Attributing to them a tendency to effect certain consequences"⁹. In other words, the person involved perceives the situation in its problematic character; he thus defines it, and attempts to locate the problem.
3. This phase involves a careful survey including examination, inspection, exploration and analysis of all relevant data necessary to define and clarify the problem. Here, ideas are evolved to guide action that must be undertaken to enhance the solution of the problem.
4. The tentative hypothesis is subjected to logical elaboration. This is the effort to determine what outcomes can be for-seen as probable in solving the problem.
5. The projected hypothesis is tested to ascertain or secure the desired result. If the problem is solved, then the learner resumes activity until he encounters another problem.¹⁰

As pointed out above, there are connections here between Dewey's analysis of thinking and his conception of educational method. The school according to him, is not only concerned with the intellectual growth of its pupils but also with the other phases of experience since they too involve apprehension of meaning. Examples of those phases of experience are ethics and aesthetics. John Dewey thus believed that from the intellectual point of view, the methodology of education should enhance activity in school that involves problem solving through the scientific method of inquiry. This should begin with the child's first experience in school. The role of the home in this endeavour cannot be overstressed. It appears that the control the school has on the scientific method of inquiry of the child at home is limited. It must be noted however, according to Dewey, that there is no set order in the five phases; there is nothing sacrosanct about having five phases; there are sub phases with each phase; in practice two phases may telescope into one; some phases may be passed over hurriedly; and the burden of reaching a conclusion may fall mainly on a single phase, which will then require a seemingly disproportionate development. Dewey concluded his explanation of not ascribing an orthodox to the five phases thus: "No set rules can be laid down on such matters. The way they are managed depends upon the intellectual fact and sensitiveness of the individual"¹¹

Since Dewey published the book, How We Think, many variations of these five phases have been suggested. Some authors have reduced the five steps to three while others have increased them to nine.¹² Irving M. Copi in Introduction to Logic preferred to refer to the scientific method as "the general pattern of scientific research."¹³ Some other authors prefer such popular labels like; "the main step in disciplined thought"¹⁴ or steps in a mode of inquiry for the social studies"¹⁵, some simply suggest variations in Dewey's list¹⁶.

One feels concerned about these five phases, as there are obvious benefits to both the teacher and the learner in Nigeria in following a paradigm of some sort. The task ahead lies in the way of

conducting discovery, a way of knowing what to do, a way of benefiting from success, a way of avoiding error. Gilbert Ryle epitomized the above thus:

Teaching people how to do things just is teaching them methods or *modi operandi* ... A method is a learnable way of doing something, where the work 'way' connotes more than mere rote or routine. We should think of inculcation of methods rather as training the pupils to avoid specified muddles, blockages, side-tracts... by training them to recognize these for what they are.... Road signs are not, for the most part impediments to the flow of traffic. They are preventatives of impediments to the flow of traffic.¹⁷

Critiques of twentieth century Western educational philosophers e.g. R. S. Peters, George F. Kneller, Harry Broudy, Jonas Soltis, and indeed critiques of western influence on the developing Nigeria philosophy of education may raise eye-brows at the caption of this essay. Such critiques, one expects to center on questions like why put a new wine into an old wine skin? Why applying Dewey's American Educational methodology to the Nigerian philosophy of education? Why not "indigenize" our educational philosophy? These and others sound apologetic, but the point is worth making; new breed of Nigerian educational philosophers and other educators and educational administrators have no cause to recommend unfeasible educational principles for this country as we have all experienced the futility of such endeavours in the past.

Application of the Five Steps to Teaching in Nigeria

For research purposes, it may be acceptable to accentuate John Dewey's complete act of thought but it may be another question attempting to apply it as a teaching method in Nigeria. It is another question because as the saying goes "The sugar-cane plant does have its own juice before the rain falls". Why does one need to introduce a new method of teaching in Nigeria at this time when everything seems being consolidated? While one realizes that no one method of teaching is the solution to pedagogical practices one acknowledges that there are serious limitations to our present methods. For example, one may claim that education does not seem to have changed substantially the character and conduct of our youngsters. There have been protests against memory work, against cramming, against what Dewey termed "gradual preoccupation with facts."¹⁹ Our pupils (may be some parents too) seem to be contented with other people's knowledge as this satisfied school purposes, for the sake of examinations and promotions.

It is time to reconsider the adequacy and inadequacy of the nature of our methods. One will not be surprised to find out that most if not all, of our primary and secondary school teachers in Nigeria teach relying on their memories²⁰ rather than on pedagogic methods, skills and experiences.

John Dewey's complete act of thought should be employed to serve as the basis of the activity method of learning of inquiry approach, which is obviously lacking in Nigerian pedagogic endeavours. The inquiry approach will go a long way to help the pupils solve problems based on

their associated and individual interests and needs. As a result of learning through this process, the pupils are expected to be able to transfer their knowledge to situations in and out of school.

Apart from that, problem-solving requires internal self-discipline desperately needed in this country, rather than the type of external coercion often administered by most teachers in our schools in the wrong belief that disciplines come from the problem itself and is internal to the requirements of the task posed by the problem. The complete act of thought of Dewey requires that instead of applying external coercion, the teacher should guide the learner in solving problems (not directly solving it for him).

It is about time that the scientific method is tried in a larger scale in Nigeria because as the pupils are guided to use it, their co-operative experiences of working with others in associated problem-solving groups are enriched. As participating members of the group, the pupils learn to co-operate with others, contribute to the discussion, they are integral part of the deliberations and decide to act with others. This method of education will definitely stress the co-operative act, based on shared experiences and use of democratic practices urgently needed to bring sanity into the whole gamut of the society.

The purpose or end of education according to Dewey is growth, which leads to the direction and control of subsequent experience. Growth involves the ability to relate experiences and to use them. Learning by experience through problem-solving means that education like life is a process that involves the continuous reconstruction of experience.²¹

As one embarks on the discussion of the application of these five phrases to teaching method in the philosophy of Nigerian education, one needs to make two clarifications. Firstly, though one may argue that these five phases are equally applicable to the lecture or recitation methods, that is, in the sense that they represent what the teacher should do, they are however more generally closely associated with the discovery, scientific or reflective method of teaching. The simple reason behind the above is that the discovery method requires continued, active participation by both the teacher and pupils. The five phases serve as guide for both the teacher and the pupils as they endeavour to tackle learning problems. Secondly these five phases should not be viewed as constituting a “method of teaching” as the ‘phase’ might have suggested as it is being employed in this essay. They are not teaching steps but rather stages of thought applicable to many other activities, including teaching. The teacher and students may use these stages as a guide but these steps are not unique or exclusive to teaching.

As pointed out earlier on, the role of the teacher as a guide in the application of the complete act of thought method cannot be over stressed. Below is a presentation of four outlines on this method based on Dewey’ steps. The aim at this juncture is to provide the teacher with a wider range for choosing guidelines to follow as a basis for working out his own guidelines.²²

1. For the general pattern of scientific inquiry, e.g. why does opium produce sleep?
 - a) A problem is noticed or discerned
 - b) Possible hypotheses are discussed
 - c) It may be necessary to collect additional facts.

- d) Hypotheses are formulated to enhance the explanation of the facts encountered.
 - e) Testable consequences are deduced.
 - f) The consequences are tested
 - g) The final results of the consequences are applied.²³
2. For disciplined thought, e.g. Mathematics.
- a) Identification of the problem or issue.
 - b) Gathering, organizing and evaluating relevant data.
 - c) Analysis of the problem or issue
 - d) Possible hypotheses are formulated and tested.
 - e) Conclusions are arrived at.
 - f) These conclusions are tested. In the instance of mathematics the conclusions of solution arrived at, can be considered to solve similar issues or problems.
3. Steps in Judgment in Policy-Making.
- a) Common purpose is clarified through mutual interpersonal persuasion. In other words, the pupils are guided to formulate the state of affairs they wish to establish in future concerning the aspect of the society, which the problem embraces.
 - b) The exploration or survey or assessment of existing conditions and their connection with the ends projected and desired.
 - c) A plan of the charting of action leading through existing conditions to the
 - d) projected state of affairs²⁴
4. Phases in a mode of inquiry for Social Studies, e.g. Geography and History lessons.
- a) A problem is recognized.
 - b) Hypotheses are formulated through asking analytical questions, relating hypotheses, and constantly reminding the pupils to be aware of the tentative nature of hypotheses.
 - c) The logical implications of hypotheses are recognized.
 - d) The necessary data are gathered.
 - e) Data are analyzed, evaluated and interpreted.
 - f) The hypotheses are evaluated in the light of the data collected. In this phase, there could be modifications since some data may be rejected for illogical implications but finally a generalization is stated²⁵

The outlines sketched above should not obscure a significant point. It is simply not enough for the teacher to be aware or follow this step. That will be tantamount to making a mockery of the scientific method. It is not sufficient to ask the people to explain the cause of hired assassination or to define decision on the public execution of armed robbers. The teacher needs more than the five phases of John Dewey as a guide. Both the teacher and the pupils, but especially needs, for example some plans schema to assist him asses a policy decision on the execution of armed robbers or the payment of a fine as a punishment and deterrent for hoarding. The teacher ought to know what constitutes a reasonable justification of a policy to be able to guide the pupils towards a rational approach to similar situations. The teacher should similarly know what constitutes an explanation in order to be able to guide the pupils to explain the cause of assassinations and armed robbery in

Nigeria. The scientific method and the scheme for explanation seem to complement each other. The nature of the scientific method calls for explanations since most of the problems will be answering to the question “Why?”

Non-valuative questions (of concepts and content) such as the discovery method tackles focus on agreement about definitions, facts or explanations. For example the pupil(s) who respond(s) to questions like: why is there hoarding of goods and inflation of prices in Nigeria? Or how the Supreme Council was formed; and why and how the exploration of Mungo Park affected and influenced subsequent British explorer of the River Niger? must offer explanations. According to Ronald T. Hyman in *Ways of Teaching*, “facts stating and the offering of explanation are similar in that both involve reliance on evidence, but explaining is the more complex of the two in that it involves relating facts either to each other or to a generalization or a function”.²⁶ One cannot do without agreeing with Hyman because most discovery projects involve explanation since they go beyond the statement of facts. Moreover an explanation schema is closely related to a request for a cause of function.

As alluded to above, an explanation is an answer to the question, “why”? Irving Copi defined an explanation as a group of statement or a story from which the thing to be explained can logically be inferred and whose assumption removes or diminishes its problematic or puzzling character”.²⁷ From the above it is clear that explanations involve such questions as, “Explain why egrets fly south during the dry season? “Explain what caused the Nigerian civil war; explain why 8 times 5 equal 40: It should be noticed that questions like “Explain the meaning of the term “osmosis”; “Explain how to adjust an alignment” do not fit into this scheme since these two questions can be phrased to read “define the term osmosis”; Describe how to adjust an alignment”.

Three Types of Explanation as Applicable To the Steps of “Complete Act of Thought” Method

Three main types of explanations²⁸ will now be considered that can guide the teacher in the application of the complete act of thought method. The types include (1) Generalization — specific instance; (2) purpose or function; and (3) chronological or sequential. Only one example will be proffered in each explanation.²⁹

Generalization — (Specification Instance type of explanation)

The basic parts of this type of explanation include: a generalization, which may be a rule, a norm or an empirical (scientific) law, e.g. white walls reflect sunlight (thus produce brightness); a situation or event to be explained, e.g. why is the principal’s office so bright; evidence to show that the situation is a specific instance of the generalization e.g. the principal’s office is bright. There is of course connecting evidence, which leads to the explanation of the situation. In the case of the example above, the connecting evidence may be something like; sunlight comes into the principal’s office since it has white walls. This connecting evidence leads one to the understanding of the conclusion explaining why the principal’s office was bright. (At the end of the consideration of these types of explanations, reasons will be given for the importance of explanation in the scientific method).

Purpose or Functional Explanation

According to Hyman “A functional explanation may be offered for the occurrence of a particular situation at a particular time or for the existence of a particular situation in a system for however long the system may exist”. Let us consider the police situation in our system as an example. The basic part of this explanation includes: a purpose intention or function (responding to a question like: why do we have police men?) e.g. in order to serve and protect the citizens; a particular situation to be explained, e.g. why do we have policemen? Evidence (s) that the action accomplished (by the policemen) is consonant with the purpose of the agent, e.g. in principle as far as Nigeria is concerned, one may answer positively, but in practice, it may be another answer. This example may limp (like many other examples) but it has been proffered on purpose.

Sequential or Chronological Explanation

In this type of explanation there are series of events that result in the situation to be explained e.g. explain how the Constituent Assembly was formed or explain the events that led to the banning of the importation of certain goods into Nigeria. In short, listing chronologically or sequentially some of these steps relevant and necessary for its occurrence explain evidence.

The specific objective of this essay is that at the end of this “lesson” the teacher having kept those three types of explanations and their schemata in mind will be able to direct a complete act of thought method involving an explanation of some intriguing situation. The teacher should also be able to discern where the specific contributions of the various students fit into the complete picture of the explanation offered. It is hoped too that the teacher will be able to schematize the flow of the mutual exchange of ideas and lead the pupils to resolve their perplexity and doubt.

Those types of explanation will help the teacher to eliminate a principal source of confusion and lack of understanding in a typical Nigerian classroom, the teacher will be able to avoid the situation of misunderstanding arising from an incomplete explanation. As some of us who taught in schools before would have experienced, some pupils offer elliptical explanation by failing to state the generalization under which a particular or specific instance to be explained is subsumed. Let’s take an example in answer to a question like; why do we have a heart that beats? A pupil might offer only connecting evidence, “we cannot do without a functioning heart. When the heart stops beating, men die” or he might simply tell the purpose, “to pump blood to nourish the body.” In such a situation, it is highly probable that there would be pupils who will fail not only to follow the explanations but also fail to understand the explanation since they cannot make anything out of the explanations, they are simply confused. This is where the teacher’s roles as a guide come in. He will have to supply the missing parts and clear the confusion, which he might have created himself.

There are other avenues or tactics open to the teacher to employ as direct (or even indirect) challenges for more explanations. Some of these challenges may force the pupils to realize without being told directly that this explanation is unsatisfactory. For example let us consider this dialogue:

Teacher:	Why are these two angles equal?
Pupil:	Because they are supplementary.
Teacher:	Are supplementary angles equal?

Pupil: Excuse me sir, No, they are not (He makes another guess).
Teacher: That is better.

Robert H. Ennis in Logic in Teaching suggested that the teacher can apply what he termed “standard probes” to make the pupil restructure a seemingly conflicting explanation. Some examples of these probes include “Can you tell a little more about that?” “Could you be more explicit, please?”³¹

The crucial point to be noted is that only when the pupils understand all the parts of the explanation being offered (e.g. generalization, purpose or sequential; connecting and specific evidences) can the teacher and the pupils discuss the acceptability of that explanation. Question like the following are relevant to associated mutual discussion to enhance better understanding of explanation. Is the generalization relevant to the specific instance, e.g. white walls reflect sunlight — (generalization); the principal’s office is bright (specific instance), Is the connecting evidence pertinent? (Sunlight comes into the principal’s office, which has white walls). Is the connecting evidence true? Is the sequence of events correct? Is the conclusion arrived at compatible with established knowledge? Is the purpose consonant with the performer’s character?

One item remains to end this essay: identifying two problems inherent in the application of the complete act of thought method. Let us consider for an example that the teacher knows the answer to a question like “Explain why and how the Supreme Military Council was formed”, will it be proper to call the discussion that will ensue a complete act of thought or specific inquiry method? Is the teacher inquiring or discovering? Are the pupils discovering if the teacher asks exactly the right question to be able to elicit the right answer? What if the teacher has provided the students with the right equipment and the right procedures to follow in the laboratory, can one say that the pupils are thus inquiring? An interjection one likes to make is that in Nigeria, to some very light minded people, in an attempt to respond to the above questions (which to my mind cannot be easily answered but can be subjected to intense discussion) may say something like: “But the teachers are expected to know already (at least somehow) the answer to the questions and the outcomes of the experiments they set for the pupils. As pointed out, such questions merely point out the problems inherent in the method. There are still other questions to point out the weaknesses of the methods: if the pupils are inevitably successful due to the teacher’s close guidance, will they be able to inquire on their own when there will be no teacher to do any promptings? If the teachers lead the people to feel-fail-safe, will they get the sense of exploring, grouping and occasional failure that comes the way of individuals attempting to discover on their own?

While one will advise that teachers should be careful not to make a mockery of this method in their classroom application, the above and many other questions can simply be responded to by counseling teachers not to suggest (and not to allow the pupils either) easy perplexities and doubt, which may warrant easily arrived at correct answers. The purpose of the method to challenge pupils to think and discover things for themselves together to resolve problems will thus be defeated.

In summary, looked at John Dewey's complete act of thought method and considered how it can be applied to teaching in Nigeria. In that endeavour, the three main types of explanation and the use of explanation schemes with concrete examples were examined and discussed.

Notes

- 1) Although John Dewey is known internationally as one of the chief exponents of the doctrine of education and democracy, issues have been raised concerning the affinity between education and the theory and practice of democracy. For more on such issues, see Brian Crittenden (1973), Education and Social Ideals: A study in Philosophy of Education. Canada Longman Limited, Pp.160 ff.
- 2) For a very comprehensive review of John Dewey's literary works, see Guide to the Works of John Dewey, edited by J.O. Ann Boydston (1970), Carbondale: Southern Illinois University Press
- 3) George Hegel's (1770-1831) philosophy was centered on the conception of history as a dialectical process. According to Hegel, history consists of a ceaseless succession of ideological conflicts. Hegel conceived of every idea embodying both a partial truth (which he called thesis) and its contradiction (antithesis). What emerges as the consequence of the conflict of thesis and antithesis, a newer and higher idea that, in turn becomes a thesis capable of generating a new conflict. Hegel believed that through these dialectical forms (thesis, antithesis, and synthesis) human history is the unfolding of the Absolute Idea. This is evident from the perennial emphasis being placed on the importance of continuous assessment of pupils in the Nigerian primary and secondary schools.
- 4) John Dewey, Democracy and Education (1916) New York: Free Press, Chapters one to three.
- 5) Ibid. pp. 41-53.
- 6) John Dewey, (1933) How We Think 2nd edition, Boston: D.C. Heath & Co, p. 202.
- 7) Dewey, How We Think pp. 15-16
- 8) Dewey, Democracy and Education, p. 150
- 9) "The formulation of a complete act of thought" is one of Dewey's best known contributions to psychology and logic, see page 150 of Democracy and Education
- 10) Dewey, How We Think pp. 115-116
- 11) See David H. Russell (1956), Children's Thinking, Boston: Ginn & Co. p. 256
- 12) Irving M. Copi (1961), Introduction to Logic 2nd edition, New York: Macmillan
- 13) See page 40 of Isidore Starr in "The Nature of Critical Thinking and its Application in Social Studies" Skill Development in Social Studies Thirty — third Yearbook of the National Council for the Social Studies, Edited by Helen M. C. Cracken Carpenter
- 14) Edwin Fenton (1967), The New Social Studies, New York: Holt, Rinehart and Winston, p. 16.
- 15) William H. Burton, et al, corroborated John Dewey's stand on how we think in their Education for Effective Thinking (1960). New York: Application Century Crafts p. 317.
- 16) See Gilbert Ryles's "Teaching and Training" in R.S. Peters (1967), The Concept of Education, New York: Humanities Press, pp.114-115.
- 17) For a critical assessment of this statement, see A Philosophy For Nigerian Education edited by A. Adaralegbe; A Fajana, "Missionary Educational Policy in Nigeria, 1842-1882", West African Journal of Education 14 (June 1970) pp .100-
- 18) 109; J.F. Ade Ajayi, Christian Missions in Nigeria, 1481-1891 London: Longmans, Green & Co. 1965.

- 19) Dewey, Democracy and Education, p. 187.
- 20) Memories here refer to those who have been alleged to possess “little knowledge” but cover this up by constantly reminding their colleagues and pupils that they had been on the job for so many years.
- 21) See Dewey, Democracy and Education, chapters four and eleven. In this endeavour, references will be provided to enhance the teacher’s research.
- 22) For details on the general pattern of scientific research, see Irving M. Copi, Introduction to Logic, pp. 433-451.
- 23) Othanel B. Smith, et al., Fundamental of Curriculum Development (1957), New York: Harcourt, Bruce & World, pp. 376 — 377; Bruce R. Roup, et al, The
- 24) Improvement of Practical Intelligence (1962), New York: Bureau of Publications, Teachers College, Columbia University, pp. 102-110.
- 25) Fenton, The New Social Studies, pp.16—17.
- 26) Ronald T. Hyman, Ways of Teaching, p.108.
- 27) Copi Introduction to Logic. p.420
- 28) For other types of explanation see Robert H. Ennis Logic in Teaching (1969) New Jersey: Prentice Hall, Inc. Pp. 255-362.
- 29) For other examples, see Ennis, Logic in Teaching, pp. 308—321.
- 30) Hyman, Ways of Teaching, p. 111.
- 31) Ennis, Logic in Teaching, p.291.

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